IN THE SPECIFICATION:

Please amend the paragraph beginning at page 1, line 12 as follows:

In light of the trend ~~of~~ to smaller and smaller-sized electronics devices, conventional discrete circuits are narrowly fabricated into a silicon-based or GaAs-based wafer using integrated circuits technology. The advent of the ULSI era in chip density has forced a radical upgrading of semiconductor processing technology. An integrated ~~circuits~~ circuit chip itself is fragile and very tiny in dimension ~~and fragile in itself~~. There is a desire, for practical applications, to "wrap it up" ~~to prevent~~ thus insulating it from external force or environmental factors, which may cause the chip to be electrically or physically damaged. Meanwhile, it is needed to connect the chip to other external circuits to make the circuits combined with on-chip and off-chip circuits, forming a device to perform a specific function. ~~The~~ This technology, "~~Electronic~~ electronic packaging", puts ~~the~~ these two ~~forgoing~~ needs into realization, which not only makes the chip properly located and well-connected to the external circuits, but also forms connections between the chip and external circuits.

Please amend the paragraph beginning on page 2, line 1 as follows:

For the present, electronic products have a trend to be becoming slighter and smaller. To satisfy the above requirements, integrated ~~circuits~~ circuit technologies have been progressing in producing high-density, high-speed, high-capacity and light chips. The increasing power dissipation from on-chip circuits arouses an issue the IC is over-heated, which would make some electronic components walk off the range which they may always feature at normal temperature. Some components have changes in their

properties, and ~~some,~~ ~~even,~~ get damaged perpetually. There is an expectation to deal with such a heat-spreading problem in packaging technology as the increase on speed of the current IC packages.

Please amend the paragraph beginning at page 2, line 9 as follows:

FIG. 1 shows a conventional package which includes a substrate 2, a die 4 formed on the substrate via die attach epoxy 6. The die is electrically connected to the substrate 2 through gold wire bonds 8. Solder balls 10 for signal transfer ~~is~~ are formed on the bottom surface of the substrate 2. Molding compound 12 is used to cap the die 4 and gold wire bonds 8 for protection purpose. Heat from the die 4 is spread by using thermal vias 14 in the substrate 2 and thermal balls 16 connected to the thermal vias 14. However, the heat generated by components in the die is increased due to the increasing packaging density. This also causes the conventional package to fail to satisfy the future demands.

Please amend the paragraph beginning at page 2, line 17 as follows:

As the semiconductor production continuously grows, many structures of packages are suggested. Among them, a plastic molded package can be found, as described in U.S. Patent No. 5,586,010. Another structure of package is disclosed in U.S. Patent No. 5,629,835 to Mahulikar et al., entitled "METAL BALL GRID ARRAY PACKAGE WITH IMPROVED THERMAL CONDUCTIVITY".

Please amend the paragraph beginning at page 2, line 22 as follows:

For the present, conventional packages such as SOP~~,~~ and PQFP-type packages are not able to further increase the number of the lead frames around them. For the sake of more lead frames, the current packaging technology has turned to BGA-type packages. The BGA package is featurized by its spherical I/O-functioned leads, which are shorter, and hence operate with higher speed, and are not apt to become deformed. Therefore, the BGA packaging is well-suited for the future packaging topology. The spherical leads of the BGA are arranged as an array, but not circumferentially about the package as conventional lead frames are. Consequently, the BGA can readily increase the spherical balls on it. Coupled with the larger pitches, the BGA are a rather competitive candidate as considered a current and future packaging type.

______Many proposals for an improved heat-spreader equipped BGA package are put forth. For example, kinds of heat slugs, heat sinks in any shape are attached to packages or packaging structures to improve the efficiency of spreading heat from packages.

Please amend the paragraph beginning at page 3, line 7 as follows:

______Fig. 2 shows the package in the prior art 2. Two wings of the heat spreader 32' is fixed on the substrate 20' by a soft material, and thus the heat spreader 32' is well supported. Then the substrate 20' and the heat spreader 32' is sealed with molding compound 30' but the top side of the heat spreader 32' exposed. Actually, there are many holes (not shown) through the heat spreader 32', and molding compound 30' is driven into the heat spreader 32' therethrough. Unfortunately, there may be defects on

the molding compound 30' (e.g., some air may be left in the molding compound)~~,~~ which would make the thermally conductive paths between the molding compound 30' and the heat spreader 32' discontinuous. The heat resistance between them is thus ~~risen, and which makes~~ raised making the efficiency of heat spreading poor. Additionally, two wings of the heat spreader 32' are sealed within the molding compound 30' but only the top surface at the center of the heat spreader 32' is exposed to the ambient, which further worsens ~~the~~ efficiency.

Please amend the paragraph beginning at page 3, line 19 as follows:

~~As~~ With the increase ~~on~~ in speed ~~for the~~ of current and future integrated circuits, the current heat-spreading mechanisms are expected to be further improved. To settle the problem of heat spread in a package, the present invention suggests two structures with high-performance capability of spreading heat from a package, which are different from those in prior ~~arts on~~ art as to their fabrication processes and structures.

Please amend the paragraph beginning at page 4, line 4 as follows:

There are two structures proposed to enhance the efficiency of spreading heat in accordance with this invention. Different from the process used in the prior ~~arts~~ art of attaching a heat slug atop the substrate before molding process, the present process is to mold on the die to protect it and to proceed with heat slug attachment in this invention. By enlarging the area of the heat slug contacted with ambient air, the efficiency of spreading heat is apparently risen. However, in the prior art, large parts of the area of the heat sink embedded in the molding compound layer, and hence less

area is contacted with the ambient. Obviously, the evidence tells that the proposed structures show better ~~performances~~ performance in reducing thermal resistance between the junctions of transistors in the chip and the ambient, and hence achieve improved heat sink equipped packaging structure.

Please amend the paragraph beginning at page 5, line 1 as follows:

FIG. 4 is a cross-sectional diagram of the heat sink equipped package in the second embodiment ~~in accordance with~~ of the present invention.

Please amend the paragraph beginning at page 5, line 3 as follows:

FIG. 5a is a diagram representative of a die bonding process representative of ~~in~~ the manufacturing process flow of the heat sink equipped package in the preferred embodiment ~~in accordance with~~ of the present invention.

Please amend the paragraph beginning at page 5, line 6 as follows:

FIG. 5b is a diagram representative of a wire bonding process in the manufacturing process flow diagram of the heat sink equipped package in the preferred embodiment ~~in accordance with~~ of the present invention.

Please amend the paragraph beginning at page 5, line 9 as follows:

FIG. 5c is a diagram representative of a molding process in the manufacturing process flow diagram of the heat sink equipped package in the preferred embodiment ~~in accordance with~~ of the present invention.

Please amend the paragraph beginning at page 5, line 12 as follows:

FIG. 5d is a diagram representative of the assembly process of the heat-spreader in the manufacturing process flow of the heat sink equipped package in the preferred embodiment ~~in accordance with~~ of the present invention.

Please amend the paragraph beginning at page 5, line 15 as follows:

FIG. 5e is a diagram representative of the ball placement process in the manufacturing process flow of the heat sink equipped package in the preferred embodiment ~~in accordance with~~ of the present invention.

Please amend the paragraph beginning at page 5, line 18 as follows:

FIG. 5f is a diagram representative of a singulation process in the manufacturing process flow diagram of the heat sink equipped package in the preferred embodiment ~~in accordance with~~ of the present invention.

Please amend the paragraph beginning at page 5, line 26 as follows:

Turning to Fig. 3, ~~which depicts~~ the cross section view of the package in the first embodiment is illustrated. As shown therein, the package 10a includes a substrate 20. A semiconductor chip or die 22 is fixedly adhered to the substrate 20 by means of a die ~~attach~~ attaching material such as die ~~attach~~ attaching epoxy 24. The substrate 20 has a first major surface and a second major surface. The first major surface is referred to as the upper-sided surface of the substrate and the second major surface is referred to as

the lower-sided surface of the substrate. The substrate 20 includes a plurality of conductive traces (not shown), such as flexible printed circuits formed therein. The conductive traces of the substrate 20 are used to provide electrical conductive paths for signal transfer. The material used for the substrate can be a dielectric material, for example, ~~Polyimide, Phenolic Resin or Bismaleimidetriazine~~ polyimide, phenolic resin or bismaleimidetriazine (BT). Of course, any other suitable materials can be used for the substrate. The conductive traces can be made of gold. copper or conductive metal or alloy.

Please amend the paragraph beginning at page 6, line 11 as follows:

Again ~~in~~ referring to FIG. 3, the chip (die) 22 and the substrate 20 are interconnected by means of signal transferring means such as bonding wires 26, which can be, for example, gold wires. Actually, the die 22 is connected to the conductive traces on the substrate 20. Using conventional wire bonding or some other techniques, the chip 22 is coupled to the conductive traces. As aforesaid, the conductive traces are on the substrate for providing electrical connective paths. One end of the bonding wire 26 is connected to the chip 22 via a conductive pad formed thereon, the other end of the bonding wire 26 is connected to a solder ball of a BGA array 28 formed on the lower-sided surface (second major surface) of the substrate 20 via the conductive traces.

Please amend the paragraph beginning at page 6, line 20 as follows:

Molding compound 30 is covered on the die 22 to protect the die 22 and the signal transferring device 26. A thermally conductive material is layered on the top

surface of the molding compound. The heat-spreading device is capped atop the thermally conductive material and the molding compound, wherein the thermally conductive material acts as a material for thermal transfer from the molding compound to the heat-spreading device. The heat-spreading device can be made of ~~excellently~~ highly conductive material, such as copper, silver, metal, or metal alloy.

Please amend the paragraph beginning at page 7, line 9 as follows:

In the preferred embodiment of the invention shown in Fig. 4, there exists a downward bump 31 at the center of the heat slug which is geometrically different from the heat slug shown in Fig. 3. The compound 30 has a receessed portion to receive the downward bump 31. The bump 31 makes the heat slug near the top side of the die 22, and thus conducts heat from the die 22 more efficiently. It is noted that the bump 31 should not attach tightly to the die 22, but should have some spacing from the die 22 to prevent the die 22 from rubbing against the bump 31 caused by the different thermal expansion coefficient. A thermally conductive glue can be added between ~~them and isolate them~~ the bump 31 and the die 22. The glue also isolates the bump 31 with respect to the die 22.

Please amend the paragraph beginning at page 7, line 17 as follows:

Referring to ~~Fig~~ Figs. 5a-5f, which ~~depicts~~ depict the manufacturing process of the structure in the second embodiment of the invention. The process starts with die bonding as shown in Fig. 5a, and is then succeeded by wire bonding as shown in Fig. 5b, molding as shown in Fig. 5c, and then by assembly of a heat-spreading device as

shown in Fig. 5d. The assembly process begins with priming a thermally conductive glue 48 on the concave of the molding compound 30. Next ~~with fixing~~ the heat-spreading device 32 is fixed onto the molding compound 30 and the glue 48 by a vacuum pick head 52. The glue 48 ~~is acted~~ acts as an intermediate layer for conducting heat from the die to the heat-spreading device, which then conducts heat away from the package to the ambient.

Please amend the paragraph beginning at page 7, line 26 as follows:

The prototype of the structure ~~is appeared~~ appears with the finishing of the assembly for the heat-spreading device. Then ball placement is undertaken to connect external circuits by implanting solder balls onto the conductive plate below the substrate as shown in Fig. 5e. Finally ~~with~~ there is singulation to obtain individual packages from batches of packages in the manufacturing flow, which is shown in Fig. 5f. The method for formation of the structure in the first embodiment is similar to the ~~one in~~ method for formation of the structure in the second embodiment.

Please amend the paragraph beginning at page 8, line 5 as follows:

Finally, the comparison ~~on their~~ of thermal performances among the three packages is ~~showed~~ shown in Table 1. As set forth therein, 5.0W power is applied to the tree packages respectively with the ambient temperature of 22°C, and with their heat spreaders 32' made of aluminum and copper. The package in the prior art 2 shows a thermal resistance of 16.72 °C/W, and 18.83 °C/W for aluminum and copper-made heat spreader respectively. The package in the first embodiment is 16.53 °C/W

and 16.28 °C/W. The package in the second embodiment is 15.71 °C/W and 15.34 °C/W. By data measured and shown above, the two packaging structures put forth in the present invention are obviously superior to the packaging structure used in the prior art 2.

Please amend the paragraph beginning at page 8, line 16 as follows:

As is understood by a person skilled in the art, the foregoing preferred embodiments of the present invention are ~~illustrated~~ illustrative of the present invention rather than limiting of the present invention. ~~It is~~ They are intended to cover various modifications and similar arrangements included within the spirit and scope of the appended claims, the scope of which should be accorded the broadest interpretation so as to encompass all such modifications and similar structures.